UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,590	10/23/2001	Norman C. Chan	499059-B-01-US (Chan)	6481

47523 7590 11/22/2004

JOHN C. MORAN, ATTORNEY, P.C.
4120 EAST 115 PLACE
THORNTON, CO 80233-2623

EXAMINER	
LERNER, MARTIN	

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/037,590	CHAN ET AL.	
	Examiner	Art Unit	
	Martin Lerner	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 to 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/22/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the first two lines are not a complete sentence. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities:

On page 7, line 13, "miss dials" should be –misdials—.

On page 21, line 29, "implement" should be –implemented—.

On page 23, line 1, "to" should be inserted between "vector" and "identify".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 11, 12, 15, 16, and 21 to 24 are rejected under 35 U.S.C. 102(b) as being anticipated by *Daudelin*.

Regarding independent claims 1 and 21, *Daudelin* discloses a method and apparatus for call classification, comprising:

"a receiver for receiving audio information from the called destination endpoint" – a calling customer provides input of speech or tones (column 6, line 68 to column 7, line 5: Figure 2: Step 204); for collect calls, a called party responds "yes" or "no" to an announcement: "You have a collect call, will you accept charges, yes or no" (column 11, lines 8 to 23: Figures 7 and 8: Steps 720, 722, 802, 804); speech or tones are "audio information" and a called party is "the called destination endpoint";

"automatic speech recognizer for determining words in the received audio information" – if decision blocks 204 or 208 recognize speech, then the speech is analyzed in order to detect a command for one of the eight types of operator assistance calls, e.g. "operator", "calling/credit card", "collect", billing" (column 7, line 60 to column 8, line 2: Figure 2: Step 214); for collect calls, a voice processing unit listens for a called party response by recognizing "yes" or "no" (column 11, lines 15 to 23: Figures 7 and 8: Steps 722, 804);

"an inference engine for classifying the call destination endpoint in response to the determined words" – if a request for one of the eight classes of operator assistance is recognized, then a transfer is made to one of the eight subroutines O, C, K, P, T, S, M, or B (column 7, lines 64 to 67: Figure 2); for collect calls, if the called party responds "yes" recognized by the voice processing unit, then the call is completed; if the called customer announces "no" recognized by the voice processing unit, then an announcement is returned to the calling customer and the call is disconnected (column 11, lines 18 to 23: Figures 7 and 8: Steps 724, 726, 806, 808); a voice processing unit for determining whether a called party accepts collect calls is equivalent to "an inference

engine for classifying the call destination endpoint" as accepting or not accepting calls in response to recognized words from the called party.

Regarding independent claim 15, *Daudelin* discloses a method and apparatus for call classification, comprising:

"receiving audio information from the called destination endpoint" – a calling customer provides input of speech or tones (column 6, line 68 to column 7, line 5: Figure 2: Step 204); for collect calls, a called party responds "yes" or "no" to an announcement: "You have a collect call, will you accept charges, yes or no" (column 11, lines 8 to 23: Figures 7 and 8: Steps 720, 722, 802, 804); speech or tones are "audio information" and a called party is "the called destination endpoint";

"analyzing received audio information for a first classification" – response from the system depends on the input from the calling customer; if the calling customer keys DTMF signals into the system, test 206 is performed (column 6, line 68 to column 7, line 5: Figure 2: Step 204); "a first classification" relates to whether the received audio response represents a tone or speech;

"analyzing received audio information using automatic speech recognition for a second classification" – if decision blocks 204 or 208 recognize speech, then the speech is analyzed in order to detect a command for one of the eight types of operator assistance calls, e.g. "operator", "calling/credit card", "collect", billing" (column 7, line 60 to column 8, line 2: Figure 2: Step 214); for collect calls, a voice processing unit listens for a called party response by recognizing "yes" or "no" (column 11, lines 15 to 23:

Figures 7 and 8: Steps 722, 804); "a second classification" relates to content of recognized speech;

"determining the call classification from the first classification and the second classification" – if a request for one of the eight classes of operator assistance is recognized, then a transfer is made to one of the eight subroutines O, C, K, P, T, S, M, or B (column 7, lines 64 to 67: Figure 2); for collect calls, if the called party responds "yes" recognized by the voice processing unit, then the call is completed; if the called customer announces "no" recognized by the voice processing unit, then an announcement is returned to the calling customer and the call is disconnected (column 11, lines 18 to 23: Figures 7 and 8: Steps 724, 726, 806, 808); "a call classification" relates to call subroutine handling by the voice processing unit.

Regarding claims 2 and 22, *Daudelin* discloses recognized words could be "credit card" or "calling card" (column 10, lines 49 to 53: Figure 2), which are phrases.

Regarding claim 11, *Daudelin* discloses a voice processing unit for determining whether a called party accepts collect calls, which is equivalent to "an inference engine".

Regarding claims 12, 16, 23, and 24, *Daudelin* discloses if the calling customer keys DTMF signals into the system, test 206 determines whether the numbers represented by the customer's keyed tones ("another classification"; "tone detection") correspond to one of the codes used for identifying the class of an operator assistance call, or the format of a calling card number (column 7, lines 3 to 21: Figure 2); implicitly, "yes" or "no" can be keyed in as DTMF signals by the called party for collect calls.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3 to 10 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Daudelin* in view of *Setlur et al.*

Daudelin discloses speech recognition for automated assistance calls, but omits the details of a procedure for speech recognition. However, *Setlur et al.* teaches speech recognition for barge-in and aural prompts, where features are extracted (column 4, lines 45 to 47: Figure 3: Step 306 – Claim 3), likelihood scores are compiled by comparing features to hidden Markov models (column 4, lines 50 to 52: Figure 3: Step 308 – Claims 4 and 25), performing dynamic programming to build a word network of possible word sequences from active node model scores using a Viterbi algorithm, and updating a decoding tree (column 4, lines 52 to 57; column 4, lines 61 to 63: Figure 3: Steps 310 and 314 – Claims 5 and 6), performing a beam search for pruning away unlikely word sequences and storing an updated active word list (column 4, lines 57 to 61: Figure 3: Step 312 – Claim 7), building a network of word sequences and updating a decoding tree built to provide the most likely word sequence (column 4, lines 52 to 63: Figure 3: Steps 310 and 314 – Claim 8), and backtracking through the beam search path using a Viterbi algorithm to output the most likely word sequence after the

utterance is declared to be completed (column 5, lines 52 to 55: Figure 3 – Claims 9 and 10). *Setlur et al.* suggests an objective of determining an end of an utterance that is faster, and reliably detects a group of words within an utterance in real time as partial word sequences. (Column 2, Lines 60 to 67) It would have been obvious to one having ordinary skill in the art to provide a speech recognition procedure as taught by *Setlur et al.* in the speech recognition method and apparatus for automated assistance calls of *Daudelin* for the purpose of quickly and reliably detecting an end of an utterance within a group of words.

7. Claims 13, 14, and 17 to 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Daudelin* in view of *Heilmann et al.*

Concerning claims 13, 14, 17, and 18, *Daudelin* discloses a procedure for call processing, where a caller response is determined to be speech or a tone (Figure 2, Step 204), but omits the details of detecting a tone by energy analysis or zero crossings. It is well known for telecommunication equipment to analyze audio features of energy and zero crossings to distinguish voice from tones. Specifically, *Heilmann et al.* teaches a system and method to discriminate call content type, where a process 300 performs an algorithm to distinguish the content of a call as either voice or voice band data (VBD) by determining the number of zero crossings of each frame and the energy of each frame. (Column 6, Lines 34 to 59: Figure 3: Steps 306 and 308) Voice band data (VBD) can be DTMF tones. (Figure 2B) *Heilmann et al.* suggests call content type discrimination for a telecommunications firewall to enhance security. (Column 1, Lines

13 to 20) It would have been obvious to one having ordinary skill in the art to analyze audio features of energy and zero crossings to discriminate voice from tones as taught by *Heilmann et al.* in the method and apparatus for automated assistance calls of *Daudelin* for the purpose of enhancing security of telecommunication equipment.

Concerning claim 19, *Daudelin* discloses a voice processing unit for determining whether a called party accepts collect calls, which is equivalent to "an inference engine".

Concerning claim 20, *Daudelin* discloses speech recognition, which utilizes Hidden Markov Models, implicitly.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Nelson et al., Dowden et al., Walters, Munson et al., and Gorin et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
11/18/04

Martin Lerner
Examiner
Group Art Unit 2654